

WHAT IS CLAIMED IS:

1. A method for controlling a camshaft control device, the camshaft control device being for steplessly changing valve timing in an internal combustion engine which has a crankshaft and at least one camshaft, a phase angle of the camshaft being changeable with respect to the crankshaft by the camshaft control device, the method comprising:

determining whether there is an adaptation of the camshaft to the crankshaft so that the phase angle of the camshaft with respect to the crankshaft may be determined;

monitoring the phase angle during an operation of the internal combustion engine; and

controlling the camshaft control device as a function of a variable setpoint value so that the phase angle is equivalent to the setpoint value.

2. The method of claim 1, wherein the camshaft control device includes a locking position, and the camshaft control device is operated in the locking position after a start of the internal combustion engine, until at least one of the following is satisfied: (i) a release takes place by an engine temperature leaving a predefinable temperature range; (ii) an adaptation requirement of the setpoint value of the phase angle is present; (iii) a predefinable time period is exceeded; and (iv) an independent release of at least one of the at least one camshaft is detected.

3. The method of claim 1, wherein the camshaft control device includes a predefinable locking position, and when there is no release command and the adaptation has not occurred, the camshaft control device is activated so that the camshaft control device assumes the predefinable reference position.

4. The method of claim 1, wherein a possibility of an independent locking of the camshaft control device is detected if an ascertained phase angle is in a predefinable locking

range that surrounds the locking position, and a setpoint value lies outside the locking range.

5. The method of claim 1, wherein in response to a detection of a possibility of an independent locking of the camshaft control device, during a predefinable time span checking as to whether an actual value of the phase angle of the camshaft control device is moved out of the locking range again and, during this time span, if the actual value of the phase angle does not remove itself from the locking region, the independent locking is detected.

6. The method of claim 1, further comprising:

initiating, as a function of an unlocking demand, an unlocking procedure for unlocking the camshaft control device; and

initiating a release procedure upon detecting an independent locking.

7. The method of claim 6, further comprising:

checking whether the release procedure has been successfully performed; and

repeating the release procedure if the release procedure was not successful.

8. A computer program that is executable on a control arrangement to control a camshaft control device, the camshaft control device being for steplessly changing valve timing in an internal combustion engine which has a crankshaft and at least one camshaft, a phase angle of the camshaft being changeable with respect to the crankshaft by the camshaft control device, the controlling being done by performing the following:

determining whether there is an adaptation of the camshaft to the crankshaft so that the phase angle of the camshaft with respect to the crankshaft may be determined; monitoring the phase angle during an operation of the

internal combustion engine; and

controlling the camshaft control device as a function of a variable setpoint value so that the phase angle is equivalent to the setpoint value;

wherein the computer program is run on a microprocessor of the control arrangement.

9. The computer program of claim 8, wherein the computer program is stored at one of a memory element, a random-access memory (RAM), a read-only memory (ROM), and a flash memory.

10. A control unit for controlling a lockable, stepless camshaft control device, the camshaft control device being for steplessly changing valve timing in an internal combustion engine which has a crankshaft and at least one camshaft, a phase angle of the camshaft being changeable with respect to the crankshaft by the camshaft control device, the method comprising:

a determining arrangement to determine whether there is an adaptation of the camshaft to the crankshaft so that the phase angle of the camshaft with respect to the crankshaft may be determined;

a monitoring arrangement to monitor the phase angle during an operation of the internal combustion engine; and

a controlling arrangement to control the camshaft control device as a function of a variable setpoint value so that the phase angle becomes equal to the setpoint value.

11. The control unit of claim 9, further comprising:

an initiating arrangement to initiate a release procedure to release the camshaft control device as a function of at least one release demand;

a checking arrangement to check whether the release procedure was successfully performed; and

a repeating arrangement to repeat the release procedure in response to a detected, unsuccessful release procedure.